

Claims

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1. A delayed release coated core producing a timed pulse release, comprising an active substance in its core and a polymer coating comprising at least one or more ammonio methacrylate copolymers, characterised in that the core comprises at least one or more surfactants, one of said surfactants being a means that diffuses into the polymer coating and at a given level provokes a sudden change in the coating's properties.

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2. A delayed release coated core according to claim 1, characterised in that the surfactants are cationic or zwitterionic in nature.

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3. A delayed release coated core according to claim 1 or 2, characterised in that the ammonio methacrylate copolymers are of type A or B.

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4. A delayed release coated core according to anyone of claim 1 to 3, characterised in that the cationic surfactants are chosen among trimethyl-dimyristoyl-ammonium propionate, dimethyl-dioctadecyl-ammonium bromide, trimethyl-cetyl-ammonium bromide, dimethyl-didodecyl-ammonium bromide, benzalkonium chloride, cetylpyridinium chloride and cetrimide.

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5. A delayed release coated core according to anyone of claim 1 to 3, characterised in that the zwitterionic surfactants are chosen among N-alkylbetaines, C-alkylbetaines, N-alkylamidobetaines, N-alkylglycines, phosphatidylcholines and lecithins.

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6. A delayed release coated core according to claim 5, characterised in that the zwitterionic surfactant is cocamidopropylbetain.

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7. A delayed release coated core according to anyone of claim 1 to 6, characterised in that the active substance is chosen among diltazem, theophylline, felodipine, verapamil, clonidine, acebutolol, alprenolol, betaxolol, metoprolol, nadolol, propranolol, timolol, captopril, enalapril, fosinopril, tiapamil, gallopamil, amlodipine, nitrendipine, nisoldipine, nicardipine, felodipine, molsidamine, indomethacin, sulindac, indoprofen, ketoprofen, flurbiprofen, fenbufen, fluprofen,

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diclofenac, tiaprofenic acid, naproxen, mizolastin, terbutaline, salbutamol, betamethasone, prednisone, methylprednisone, dexamethasone, prednisolone, sumatriptan, naratriptan, cimetidine, ranitidine, famotidine, nizatidine, omeprazole, morphine, fenoprofen, ibuprofen, ketoprofen, alclofenac, mefenamic, alfuzosin, prazosin, tamsulosin, levodopa and methyldopa, their salts and pharmacologically active esters:

8. A delayed release coated core according to anyone of claim 1 to 7, characterised in that it is a particle, pellet, bead, granule or spheroid, of a diameter
10 comprised between 0.3 and 3 mm.

9. A delayed release coated core according to anyone of claim 1 to 7, characterised in that it is a tablet.

15 10. A delayed release coated core according to anyone of claim 1 to 7, characterised in that it is a minitablet.

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20 11. A delayed release coated core according to anyone of claim 1 to 10, characterised in that the core is separated from the polymer coating by a layer of water soluble polymer.

25 12. A delayed release coated core according to claim 11, characterised in that said soluble polymer is chosen among hydroxypropylmethylcellulose, hydroxyethylcellulose and polyvinylpyrrolidone.

13. A pharmaceutical dosage form comprising at least a delayed release coated core according to anyone of claims 1 to 12.

30 14. A pharmaceutical dosage form according to claim 13, characterised in that it takes the form of a tablet, a multilayer tablet, a multicoated tablet or a capsule.

35 15. A pharmaceutical dosage form according to claim 13 or 14, characterised in that coated cores of differing delayed release times are combined together to give "stepped" release profile.

16. A pharmaceutical dosage form according to claim 13 or 14, characterised in that the release coated core(s) is/are combined with other galenic entitie(s), which release is immediate or sustained.

5 17. A pharmaceutical dosage form according to claim 16, characterised in that the other galenic entitie(s) contain(s) a different active substance as in the release coated core(s).

10 18. A pharmaceutical dosage form according to claim 16, characterised in that a first release pulse occurs immediately and a second release pulse is delayed to a fixed time.

15 19. A capsule according to claim 16, characterised in that it comprises the delayed release coated cores according to claim 8 or 10 and an immediate and/or sustained release entity chosen alternatively among

(i) immediate release particles or minitabets or an immediate release granulate or powder,

(ii) controlled release particles or minitabets;

20 20. A tablet according to claim 16, characterised in that it comprises the delayed release coated cores according to claim 8 imbedded in a rapidly desintegrating matrix and alternatively in that

(i) the matrix is free of the active substance,

(ii) the matrix also comprises the active substance,

25 (iii) sustained release particles are mixed to the delayed release particles,

(iv) immediate release particles are mixed with the delayed release coated particles,

(v) the delayed release particles are further coated with a layer comprising the active substance, allowing an immediate release.

30 (vi) the tablet consists of one or more layers comprising the delayed release particles in the rapidly desintegrating matrix and of one or more layers comprising the active substance in an immediate release matrix.

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21. Capsule according to claim 16, characterised in that it comprises one or more immediate release tablets and one or more delayed release tablets according to claim 9.

22. Multicoated tablets according to claim 16, characterised in that the tablet is coated with an immediate release soluble or disintegrable coating.

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